

NASA Advisory Council
National Aeronautics and Space Administration
Washington, DC 20546

Dr. Steven W. Squyres, Chair

April 28, 2014

Mr. Charles F. Bolden, Jr.
Administrator
National Aeronautics and Space Administration
Washington, DC 20546

Dear Administrator Bolden:

The NASA Advisory Council held a very productive public meeting at NASA Headquarters in Washington, DC, April 16-17, 2014. As you know, this was the first meeting of the restructured Council, following your decision and announcement of your plans last November 2013 to reorganize the Council.

As a result of its deliberations, and in accordance with our new "two-tier" approach for transmitting recommendations and findings to the NASA leadership, the Council approved two Council recommendations and one Council finding for your consideration. They also approved one Committee recommendation and two Committee findings for consideration by the respective NASA Associate Administrators. Copies of the latter are also enclosed for your information and awareness.

If you have any questions or wish to discuss further, please contact me.

Sincerely,

A handwritten signature in black ink, appearing to be 'S. Squyres', with a long horizontal line extending to the right.

Steven W. Squyres
Chairman

Enclosures

NASA Advisory Council Recommendation

Unmanned Aerial System Traffic Management 2014-01-01 (AC-01)

Name of Committee: Aeronautics Committee

Chair of Committee: Ms. Marion Blakey

Date of Council Public Deliberation: April 16-17, 2014

Short Title of Recommendation: Unmanned Aerial System Traffic Management

Recommendation: The Council recommends that in order to safely enable widespread civilian Unmanned Aerial System (UAS) operations at lower altitudes, advanced research and prototyping of an Air Traffic Management (ATM)-like system is needed. NASA is currently exploring the functional design, concept and technology development for such a prototype UAS Traffic Management (UTM) system. The Federal Aviation Administration (FAA) and a number of partners have expressed an interest in working with NASA in exploring the research, development, prototyping, testing and possible implementation of such a system. The Council recommends that the NASA Administrator and all NASA organizations involved in the development and sustainment of agreements and partnerships be proactively engaged in reducing implementation barriers and provide any necessary tools to enable the innovative partnerships that will be required for the realization of UTM. NASA should make this a high priority for the Agency given the urgency warranted by such a system.

Major Reasons for Proposing the Recommendation: Many civilian applications of UAS have been imagined, ranging from operations in remote areas to congested urban areas, including goods delivery, infrastructure surveillance, agricultural support, and medical services delivery. Class G airspace (up to 2000 feet) is currently uncontrolled (not under the current Air Traffic Control system) and key infrastructure to enable and safely manage widespread use of low-altitude airspace and UAS operations therein does not exist. NASA is exploring concepts and technology development for a prototype UTM system, in close coordination with the FAA and National Oceanic and Atmospheric Administration (NOAA) that will support safe and efficient UAS operations for the delivery of goods and services. Public-private-academia relationships are expected (and necessary) to help define and develop such a UTM system.

Consequences of No Action on the Proposed Recommendation: The Council is concerned that without sufficient Agency support and focus from relevant NASA organizations (e.g., procurement, General Counsel, research centers, etc.), the agility and flexibility required for NASA to develop the complex UTM system will be compromised, leading to insufficient progress and ultimately impacting results.

NASA Advisory Council Recommendation

NASA Collaborations with Department of Defense / Defense Advanced Research Projects Agency 2014-01-02 (AC-02)

Name of Committee: Aeronautics Committee

Chair of Committee: Ms. Marion Blakey

Date of Council Public Deliberation: April 16-17, 2014

Short Title of Recommendation: NASA Collaborations with Department of Defense /
Defense Advanced Research Projects Agency

Recommendation: The Council endorses NASA – Department of Defense (DOD) / Defense Advanced Research Projects Agency (DARPA) collaboration on programs of mutual interest and recommends that NASA engage DOD/DARPA leadership to identify and explore opportunities where commercial technology can benefit future military missions and/or where military technologies can benefit civil and commercial applications. Current technology areas of mutual interest include (but are not limited to) hypersonic flight, autonomous/unmanned air systems, vertical lift technology, rocket propulsion development, collaborative vehicle operations for enhanced airspace/mission management, and related data analysis tools.

Major Reasons for Proposing the Recommendation: The collaborative relationship that existed between NASA and relevant DOD/DARPA organizations is not as strong as it has been at certain times in the past. Collaborative partnerships have the potential to enable faster progress towards technology advancement in mutual areas of interest. In a constrained budget environment, the Council feels that this relationship should be reinvigorated to provide the most responsible use of Government resources.

Consequences of No Action on the Proposed Recommendation: Without renewed emphasis on NASA/DOD/DARPA collaborations, rewarding areas of technology synergy between civil and military applications will remain bifurcated and progress will be slower.

NASA Advisory Council Finding
Joint Planning and Development Office

Name of Committee: Aeronautics Committee

Chair of Committee: Ms. Marion Blakey

Date of Council Public Deliberation: April 16, 2014

Short Title of Finding: Joint Planning and Development Office

Finding: The Council would like to recognize the value of the work that NASA has supported through the Joint Planning and Development Office (JPDO). Funding for the JDPO was eliminated in the current appropriation and activities pursued by that organization are currently being integrated back into existing Federal Aviation Administration (FAA) organizations. The Council encourages NASA to discuss with the FAA how best to continue the relevant strategic and forward looking aspects that were part of the JPDO.

NASA Advisory Council – Committee Recommendation

**Technology and Innovation Committee Recommendation
to NASA Associate Administrator for Space Technology
Mission Directorate**

Small Satellites Market Pull

Name of Committee: Technology and Innovation Committee

Chair of Committee: Dr. William Ballhaus

Date of Council Public Deliberation: April 17, 2014

Short Title of Finding: Small Satellites Market Pull

Recommendation: The NAC Technology and Innovation Committee recommends that the NASA Space Technology Mission Directorate (STMD) characterize the small spacecraft mission “market pull.” This characterization should include:

- Civil, military, intelligence, commercial, academia
- What is the technology’s potential utility and societal benefits?

Major Reasons for the Recommendation: There may be real potential in developing capability to improve space mission effectiveness by using small satellites. The market pull associated with small satellites has not been well characterized for the NAC Technology and Innovation Committee.

Consequences of No Action on the Recommendation: Technology investments provide options for use in future space systems. Understanding the market pull from key NASA stakeholders will help focus the investment on developing small satellite technology options that are more likely to be used in future space systems. A lack of understanding of market needs and opportunities can lead to technology options not being exercised.

NASA Advisory Council – Committee Finding

**Aeronautics Committee Finding
to NASA Associate Administrator for Aeronautics Research
Mission Directorate**

Restructuring of NASA Aeronautics Research Mission Directorate

Name of Committee:	Aeronautics Committee
Chair of Committee:	Ms. Marion Blakey
Date of Council Public Deliberation:	April 16, 2014
Short Title of Finding:	Restructuring of NASA Aeronautics Research Mission Directorate

Finding: The NAC Aeronautics Committee endorses the approach that the NASA Aeronautics Research Mission Directorate (ARMD) is taking to restructure their organization to not only continue research on relevant and critical aviation problems, but also to renew emphasis on activities focused on high-risk, forward thinking ideas. However, the Committee is concerned critical areas of aeronautics research may get “lost in the shuffle” as the restructuring is implemented. The Committee finds that it is imperative for ARMD to maintain its commitment to both that foundational research which has always been at the core of the NASA Aeronautics mission and to continue its investment in Vertical Lift research and technology to enable U.S. leadership gains in this critical area of aeronautics.

NASA Advisory Council – Committee Finding

**Human Exploration and Operations Committee Finding
to NASA Associate Administrator for Human Exploration and Operations
Mission Directorate**

NASA's Approach to Space Related Genomics

Name of Committee: Human Exploration and Operations Committee

Chair of Committee: Mr. Kenneth Bowersox

Date of Council Public Deliberation: April 17, 2014

Short Title of Finding: NASA's Approach to Space Related Genomics

Finding: The NAC Human Exploration and Operations Committee endorses NASA's research initiatives that explore the genomic implications of space flight, including the proposed Twins Study and development of an open source approach for the Space Life and Physical Sciences GeneLab initiative. The Research Subcommittee of the Human Exploration and Operations Committee will request regular updates to these initiatives at each of its next several meetings.